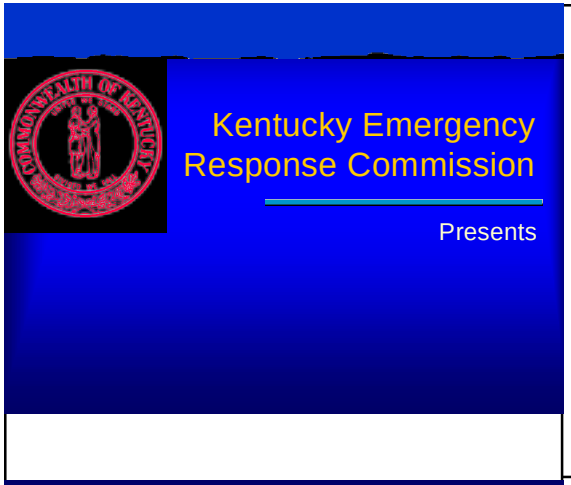
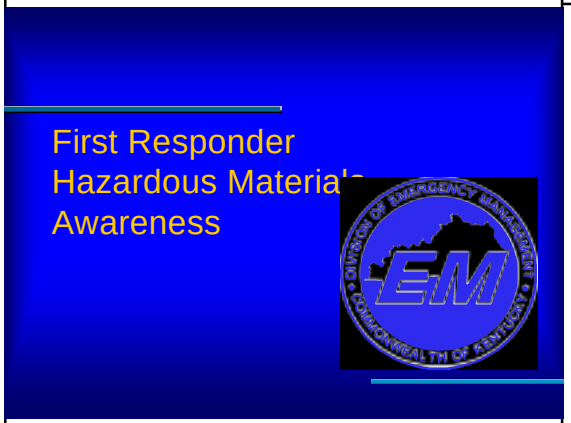
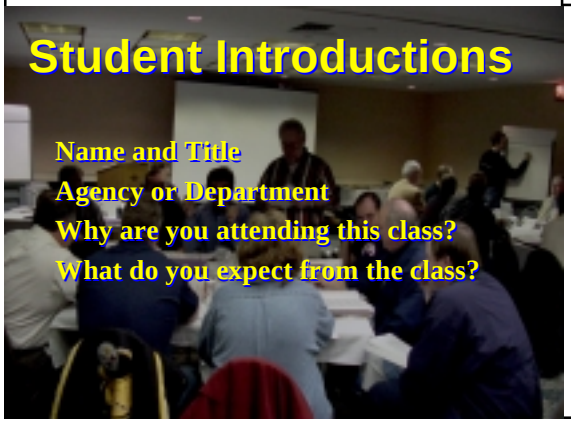
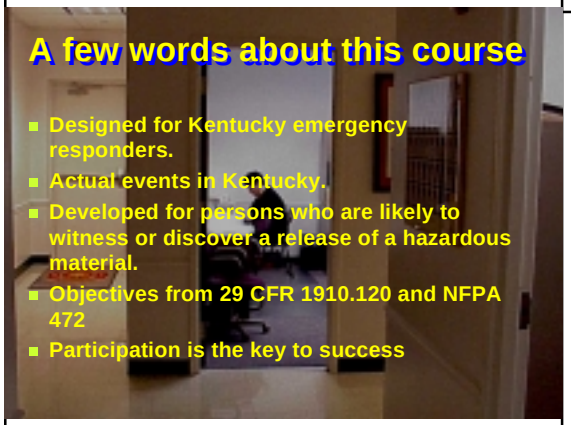
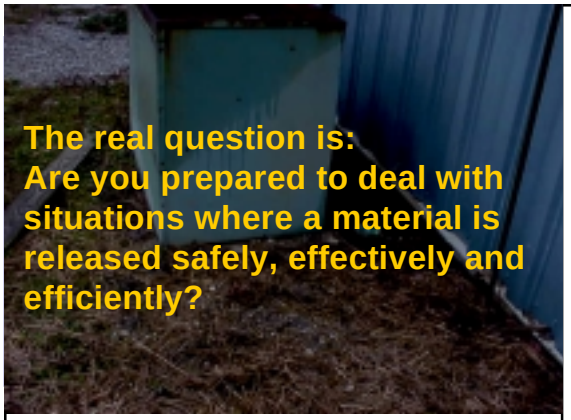
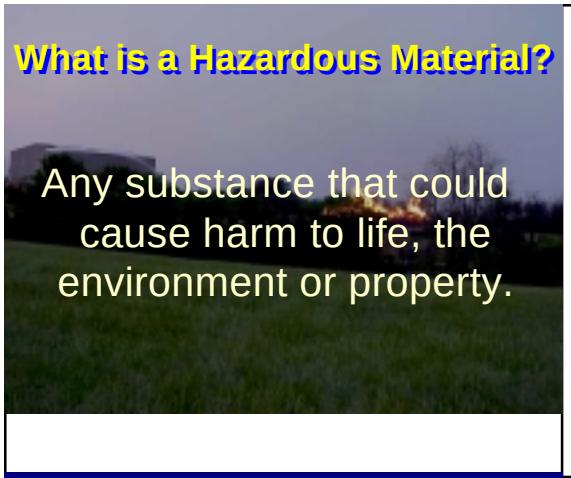
Slides	Primary Course Information	Instructor Activity/Information
		The Kentucky Emergency Response Commission (KyERC), or SERC (State Emergency Response Commission) has approved and sponsors this training. The KyERC is tasked by law to approve any training intended for hazardous materials responders.
		The Kentucky Division of Emergency Management (KyEM) developed this course for KyERC. In addition, KyEM provides administrative support to the commission.
	STUDENT PARTICIPATION Students should introduce themselves by providing: Name and Title Agency or Department Reason for attending the class Expectations for this class	You should introduce yourself and any other instructors after the students introduce themselves.

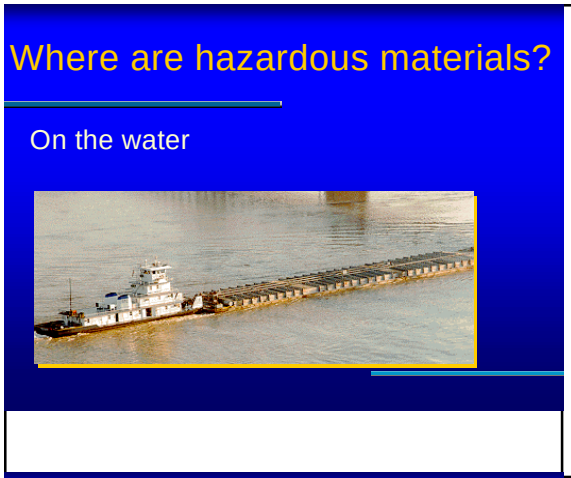
Slides	Primary Course Information	Instructor Activity/Information
	A student may miss up to 1.75 hours of this course before he or she will be required to retake the course.	This is a check list for before the course starts. **Rosters** - MUST BE LEGIBLE **Courses Hours** - 8 hours for this course **Certificates** - Usually given out in a month from the last day of the course **Breaks** - 10 minutes after every 50 minutes of instruction. Longer breaks means the class gets out later **Pagers and Cell Phones** - Recommend turning them off, unless the students are on call.
	This course was designed specifically for **Kentucky** emergency responders. 95% of the incidents and pictures in this course took place in Kentucky and are less than 3 years old. Meets 29 CFR 1910.120 - OSHA Law Meets NFPA 472 Participation is required	**Evaluations** - given at the end of the course best tool to make the course better. Each one is read. **Safety** - Practice what you preach in the classroom.
		**Danville, Ky. (Boyle County) - April 2000** This is a boxcar loaded with several tons of decomposing Sodium Diothionite (UN 1384 a.k.a. Sodium Hydrosulfite). The smoke is full of sulphur dioxide gas. When this gas mixes with waster it forms sulfonic acid.

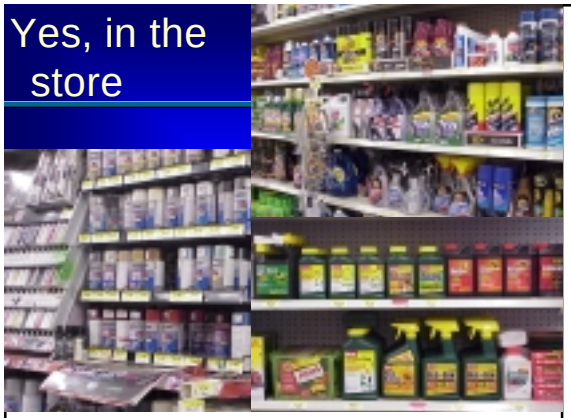
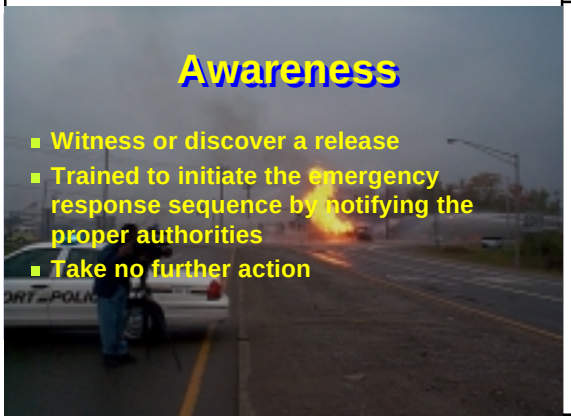
Slides	Primary Course Information	Instructor Activity/Information
		**<u>East of Lawrenceburg, KY (Anderson Co) May 2000.</u>** 250,000 gallons of Aging Wild Turkey Whiskey was released when the warehouse caught fire. The following pictures are also from this incident.
		What did not burn in the fire ranoff into a ditch that led straight to the Kentucky River immediately below the water treatment plant intake.
		The most noticiable environmental damage was the fish kill of over one million (1,000,000) fish, including many large paddlefish. The white specs in the water are fish about 24 hours post-release. The cost was several million dollars just to rehabilitate the 6 mile stretch of river affected.

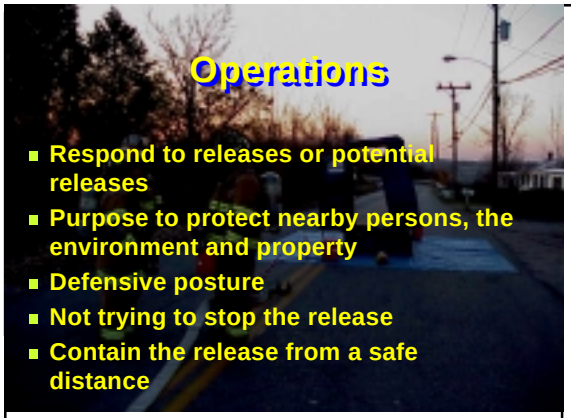
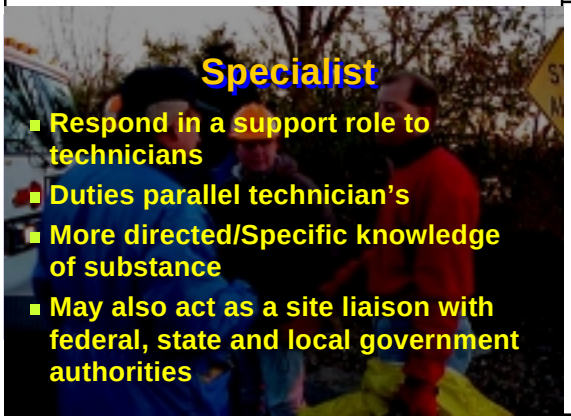
Slides	Primary Course Information	Instructor Activity/Information
	Any one of these accidents/incidents can occur in anyone's jurisdiction at any time. The whole question to the student is **<u>"Are you prepared to deal with this mess?"</u>** The hope is that at the end of this course the student will want more training and seek it out.	
		The collage slide **<u>Pictures left to right, top row</u>** <u>*Vanceburg*</u> <u>*(Lewis County)*</u> - MC 406 with 9,000 gal of gasoline. <u>*Powell County*</u> -MC 312 with 6,000 gal of Sodium Hypochloride solution. <u>*Jefferson County*</u> -DOT111 with unknown hazmat leaking/pooling. **<u>Pictures left to right, bottom row</u>** <u>*(Paducah)*</u> <u>*McCraken County*</u> - Unlabeled 55 gal drum located on the N.E. corner of the Paducah Gaseous Diffusion Plant. <u>*(Danville)*</u> <u>*Boyle County*</u> - Boxcar with several tons of Sodium Diothionite. <u>*Rural Kentucky*</u> - Crown Battery truck rolls and sends dozens of batteries into the field.
		

Slides	Primary Course Information	Instructor Activity/Information
Chapter 1 Introduction		The slides follow the student's book closely. Be familiar with the student's book and these slides before you teach the class.
Terminal Objective By the end of this module, you will be able to explain your role as a first responder at the hazardous materials awareness level in the local emergency operations plan, including site security and control; and also in the Emergency Response Guidebook.		 Restate the objective in your own words, but state it clearly enough so the student's can see the connection. The students are grading you on whether you state the objectives.
		The entire premise of this course is safety. Preach this at every chance you get throughout the eight hours you have. Do not let safety be part of the 30% that your students can miss and still pass the course.

Slides	Primary Course Information	Instructor Activity/Information
		This is the general definition of hazardous materials. You will use a more specific definition later. Use this definition to hit on the order of : **LIFE** **ENVIRONMENT** **PROPERTY**
		 ***This is a class participation exercise.*** Use a whitehboard to come up with as many places as possible for hazardous materials as you go through the next five slides. Wal-Mart is the used in the last two slides of this exercise, so don't give it away.
		UPS and Valu-Jet

Slides	Primary Course Information	Instructor Activity/Information
		
	Where is the hazardous materials in this picture? Is it in the tank or on the ground? Where is it coming from, the tank or the locomotive?	This picture is not as obvious as it seems. If you look closely between the two rail lines, there is a darkened area on the ground. This is nearly 600 gallons of diesel fuel from the locomotive. It leached through the ballast and went into a small pond near the tracks.
		Wal-Mart is a haven of hazardous materials in small packages. Wal-Mart used to store Calcium Hypochlorite (HTH) over a bleaching agent that when mixed would have a pyrophoric reaction. As hazardous materials responders, it is helpful to do some recon in some of these places.

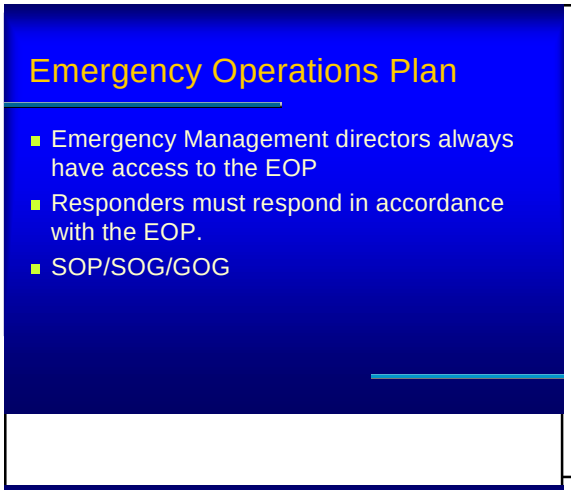
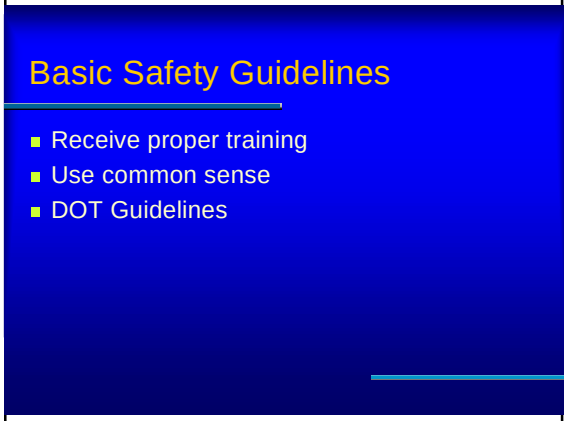
Slides	Primary Course Information	Instructor Activity/Information
Yes, in the store 		Spray paint cans - Missiles Lubricants and cleaners - Flamable liquids Pesticides - Organo-phosphates
Levels of Hazardous Materials Training ▪ Awareness ▪ Operations ▪ Technician ▪ Specialists ▪ On-Scene Incident Commander / Manager		This is as defined in 29CFR 1910.120. NFPA breaks this down slightly differently.
		 This is one of the objectives and may be seen in some form as a possible question.

Slides	Primary Course Information	Instructor Activity/Information
		Notice in Operations and Technician the word respond is in the definition. Awareness and operations are work in a defensive fashion.
		
		

Slides	Primary Course Information	Instructor Activity/Information
On-scene Incident Commander/Manager ▪ Assumes control of the scene beyond the awareness level.		This is a simple definition based on 1910.120(q). Incident Commanders must have 24 hours of operations level training and meet the the objectives required by the law. However, experience is as important as the book knowledge.

Local Emergency Response Planning
▪ Employers must develop an emergency response plan.
▪ Include elements such as:
  ▪ Pre-emergency planning with outside parties
  ▪ Roles and responsibilities
  ▪ Emergency notification
  ▪ Site security and control
  ▪ Evac routes and procedures
  ▪ Decontamination
  ▪ Protective clothing and equipment
		The best anaolgy for this is pre-fire planning. These plans, called Tab Q-7s are done for facilities who meet certain criteria in accordance with SARA Title III (Superfund Admendments and Reauthorization Act).

Local Emergency Response Planning ▪ Plans are sent to Local Emergency Planning Committee for review. ▪ Plans are sent to the Kentucky Emergency Response Commission for approval. ▪ Then incorporated into the Emergency Operations Plan (EOP) ▪ Annex Q is for Hazardous Materials Emergency Response		 This may be seen in some form as a test question. Tab Q-7's are part of Annex Q of the local and state Emergency Operations Plan.

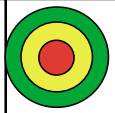
Slides	Primary Course Information	Instructor Activity/Information
		Local plans are the law - KRS 39E However, Standard Operating Procedures (SOP), Standard Operating Guidelines (SOG), General Operating Guidelines (GOG) provide the systematic, specific steps for responses. However, they must be coordinated with the Emergency Operations Plan.
		Expand on this part. Introduce students to the ERG and the response guidelines in the front of the book.
	END AWARENESS CHAPTER 1	

Slides	Primary Course Information	Instructor Activity/Information
Chapter 2 Introduction to Hazardous Materials		
Terminal Objective By the end of this chapter, you will be able to demonstrate an understanding of the potential outcomes associated with an emergency when hazardous materials are present.		 Restate the objective in your own words, but state it clearly enough so the student's can see the connection. The students are grading you on whether you state the objectives.
What is a hazardous material? ▪ Depends on who you ask ▪ **DOT** ▪ **EPA** ▪ **OSHA**	ANIMATED SLIDE Each one of these regulatory agencies has an agenda. DEFINITIONS **DOT** - 49CFR 178-179 - Anything that poses a risk during **transportation** (Exact ones are on a table in the rule) also the Secretary of Transportation can designated a substance as a hazardous material. **EPA** - 40 CFR - Hazardous and Extremely Hazardous Substances - Any substance that can cause damage to the **environment**. **OSHA** - 29 CFR - Any substance that poses a risk to **employees in the workplace**.	

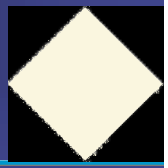
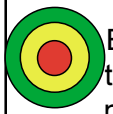
Slides	Primary Course Information	Instructor Activity/Information
A Hazardous Material ▪ Is any substance that has a potential, when released, to cause harm to the health of people, or the environment, or damage to property.	Definition of hazardous materials.	This definition incorporates all of the previous definitions. Notice the word "*potential*." Reinforce this issue. The responders not only deal with actual situations but potential situations. Example - July 2001 - several tons of military explosives were spilled onto the Bluegrass Parkway near Springfield (Washington Co). The spill was located about 500 yards from the Austin Powder Co., an explosives manufacturer. Think about the potential there.
Why do hazardous materials incidents differ from other emergencies? ▪ Wide ranging characteristics ▪ Prevalence of hazardous materials ▪ Overcoming the challenges of past training	ANIMATED SLIDE These three reasons are on the test in some form or another.	

Wide ranging characteristics
▪ No uniform characteristics
▪ In any ***form***
  ▪ Solid
  ▪ Liquid
  ▪ Gas
▪ Difficult to detect
	ANIMATED SLIDE
	
	CLASS PARTICIPATION EXERCISE.
	Reinforce this and ask the students to describe some hazardous materials in each form.
		
		This is an introduction of the term form. It becomes more important in the operations level course.

Slides	Primary Course Information	Instructor Activity/Information
Prevalence of Hazardous Materials ▪ Millions of chemical compositions ▪ Hundreds of thousands are considered hazardous ▪ Manufactured ▪ Transported ▪ Stored ▪ All of these increase the potential for a hazardous materials incident	ANIMATED SLIDE	 27 million chemical compositions are in existence according to the Chemical Abstract Service (CAS) Most of the ones condisered to be hazardous are environmentally unfriendly.
Overcoming Past Training ▪ Past Training ▪ Immediate action ▪ Rush in ▪ Ended in dead or permanently injured responders	ANIMATED SLIDE Past training (before mid 1980's) taught responders to do something, even if it meant getting a little on you. Those responders would even sniff and taste hazamat to identify it. You might ask the students in the class how many are under the age of 40, 30, and 25. With the ones under 25, ask howmany would like to spend the rest of their lives on a 40 leash attached to an oxygen cylinder.	
Hazardous Materials Incident Response ▪ Deliberate ▪ Well-Planned ▪ Informed	ANIMATED SLIDE	This is how a hazardous materials response should be. **Deliberate** - not flying by the seat of your pants or by gut instinct. **Well-Planned** - The response is coordinated by all people involved. Not by the responder on the ground. **Informed** - every responder understands, using the best information available, what the risks are, what the material may do, and how to deal with it.

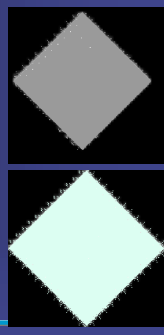
Slides	Primary Course Information	Instructor Activity/Information
Hazardous Materials Experts ■Multi-Disciplined Field ■Dynamic, Diverse Field	ANIMATED SLIDE There is not one area of hazardous materials that covers all of the concerns raised by hazmats. Chemists, Industrial Hygienists, and other highly trained/educated people may spend their professional lives focusing on one specific chemical or group of chemicals. The diversity is extreme with 27 million chemicals that have wide ranging characteristics.	**Expert** - A drip under pressure OR someone who comes from more than 50 miles away and carries a briefcase. If someone identifies themself as a "HazMat Expert" be very wary. There is no such thing and these people are often very dangerous to the responders/community.
U.S. Department of Transportation's Hazard Classes and Divisions	As hazardous materials responders, many these people will see transportation related incidents more than they will see the facility incidents. In addition, the DOT placarding system (or a varitation of it) is often used to meet the the requirements of the Hazard Communication Standard (29CFR 1910.1200) required by OSHA. Understanding this is a big help in recognizing and identifying hazardous materials during an emergency.	 Any of the DOT classes are on the test in various forms. For example, students may be required to tell what class a materials is, or thay may have to give an example of a substance when given a class.
General Comments on Hazards ■ Each material is assigned based on the most dangerous characteristic ■ Many have more than one danger ■ Often not required to mark for multiple hazards	ANIMATED SLIDE Have the students turn to student manual pages 22-23. This is a good chart they can use with examples. As you go through have them name other examples of the class.	

Slides	Primary Course Information	Instructor Activity/Information

Class 1 - Explosives
▪ Six divisions with the first presenting the greatest danger to health.
▪ Primary hazard – Will blow you up
▪ Secondary hazards
  ▪ Shock wave
  ▪ Fire
  ▪ Projectiles
 
	ANIMATED SLIDE	**<u>Explosives</u>**
		
		1.1 - Mass Detonation
		1.2 - Projection Hazard
		1.3 - Preominant Fire Hazard
		1.4 - No significant blast hazard
		1.5 - Insensitive explosives/blasting agents
		1.6 - Extremely insensitive detonating article
		
		  Be certain to us AN/FO here. Talk about the synergenistic effect when ammonium nitrate and fuel oil are mixed.

Class 2 - Gases
 
▪ 3 Divisions
  ▪ Flammable Gases
  ▪ Non-flammable, non-toxic or compressed gases
  ▪ Toxic Gases
▪ Often have multiple hazards
 
 
 
	ANIMATED SLIDE	Mulitple hazard refers to pressure and temperature.
		
		LP Gas is usually transported at about -55 F
		
		1 psi is nough to drive a 1/2 metal shank through a human skull.
		
		Anhydrous Ammonia is a non-flammable gas, but will burn and is corrosive.

Class 3 - Flammable or Combustible Liquids
 
▪ 2 divisions
  ▪ Flammable liquids – Flash point <1[illegible]
  ▪ Combustible – Flash point >141° F
▪ Flash Point
  ▪ The temperature at which a substance will flash, but not continue to burn.
	ANIMATED SLIDE
	
	Be certain to introduce the definition of flash point and why the flash point of a substance is important on a hazardous materials scene.
	
	Talk about ignition sources here too.	

Slides	Primary Course Information	Instructor Activity/Information
Class 4 – Flammable Solids ■ 3 Divisions ▪ Flammable Solids ▪ Spontaneously Combustible Materials ▪ Dangerous when Wet Materials 	ANIMATED SLIDE	
Class 5 – Oxidizers and Organic Peroxides ■ 2 Divisions ▪ Oxidizers ▪ Organic Peroxides 	ANIMATED SLIDE	
Class 6 – Toxic Materials and Infectious Substances ■ 2 Divisions ▪ Toxic Materials ▪ Infectious Substances 	ANIMATED SLIDE	Includes vaccines and certain types of medical waste

Slides	Primary Course Information	Instructor Activity/Information
Class 7 – Radioactive Materials ■ Immediate effects ■ Delayed effects 	ANIMATED SLIDE Alpha - Particle - Blocked by paper Beta - Particle - blocked by 2-3 layers of al. foil Gamma - Pure energy - lead sheild Immediate effects - radiation burns Delayed effects - cancer, radiation sickness II	Radiation burns are not thermal burns
Class 8 – Corrosive Materials ■ Could be liquid or solid ■ Can destroy human tissues ■ Can destroy aluminum or steel 	ANIMATED SLIDE This is the DOT criteria. There are time limits attached to this as well.	
Class 9 – Miscellaneous Materials ■ A material that presents a hazard during transportation, but does not meet any other hazard class definition 	ANIMATED SLIDE	DOT Definition is on the slide. This is the catchall - in many cases, hazardous waste (liquid (UN # 9189/3082) or solid (UN #9188/3077), N.O.S. may end up being something that was contaminated but still possesses the hazards of the orgiginal substance. In other words, this can have any of the hazards of any class except 7.

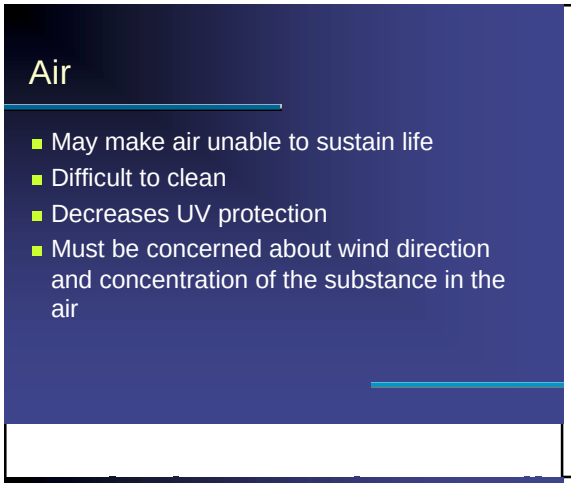
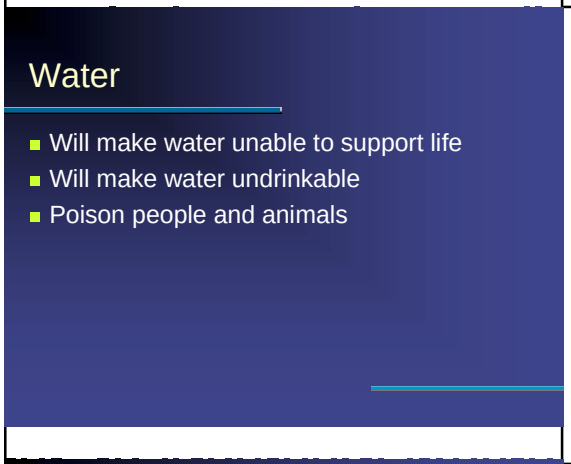
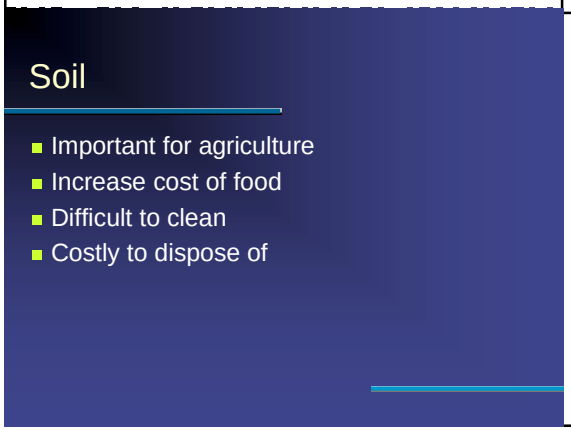
Slides	Primary Course Information	Instructor Activity/Information

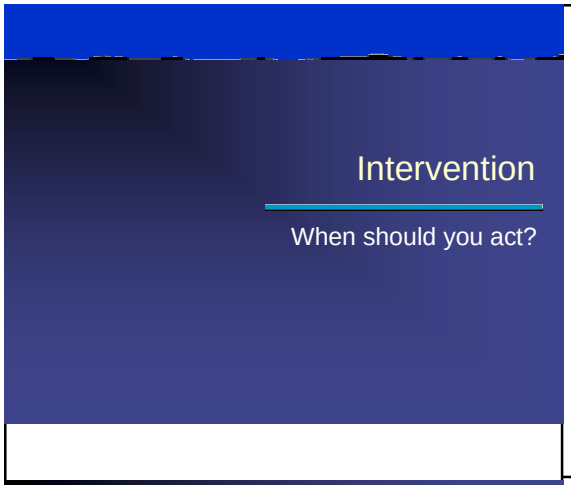
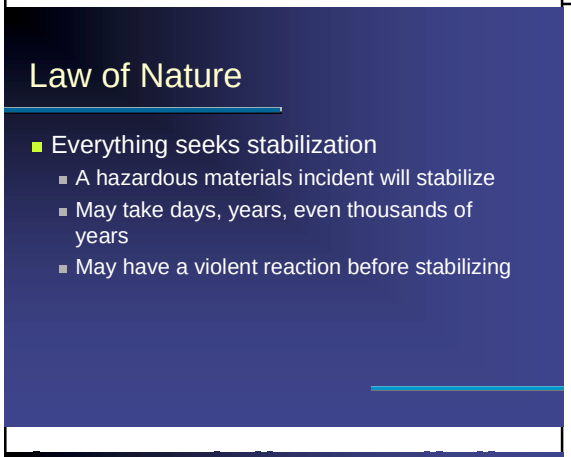
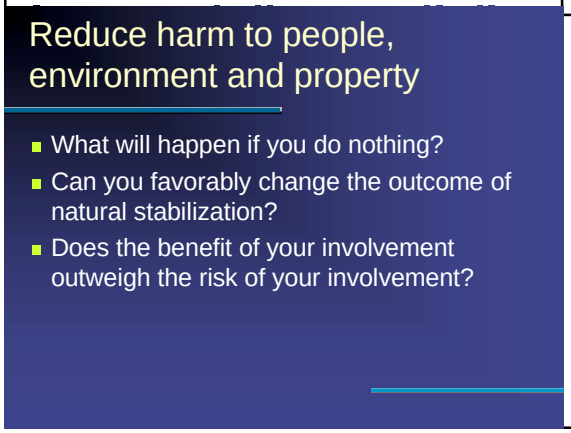
Other Regulated Materials – ORM HOT Substances
▪ Not true classes.
▪ ORMs
  ▪ Usually consumer commodities
  ▪ Packaged in individual, small packages intended for consumer use
▪ HOT
  ▪ Transported at an elevated temperature (>212 or flash point)
 
	ANIMATED SLIDE	Use this time to discuss the DANGEROUS PLACARD. In the group of placards is a DANGEROUS.
		
		The definition of what requires this placard is in the DOT Chart 11 all students should have.
		
		Table one and table two are on the back

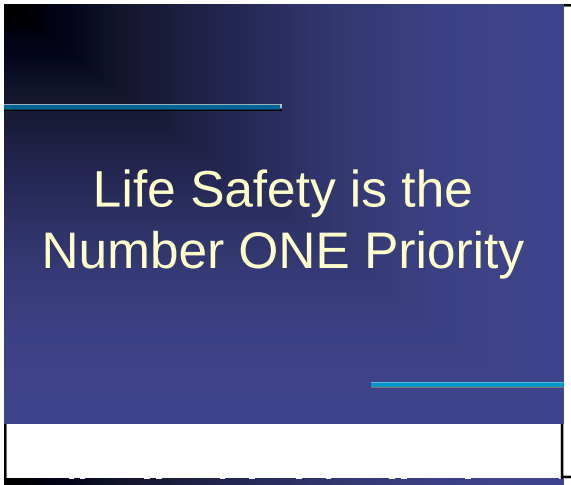
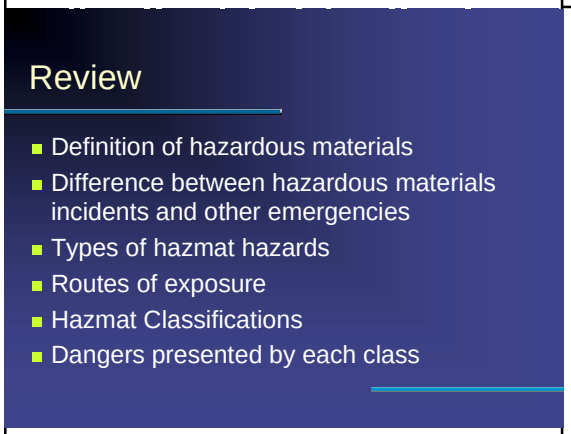
Risks to Humans
▪ Physical hazards
  ▪ Thermal
  ▪ Mechanical
▪ Chemical hazards
  ▪ Corrosives
  ▪ Poisons/Toxins
  ▪ Asphyxiants
	ANIMATED SLIDE	

Risks to Humans
▪ Radiation hazards
  ▪ Immediate – Radiation burns
  ▪ Delayed – Internal damage
▪ Etiologic hazards
  ▪ Microorganisms
  ▪ Toxins created by microorganisms
	ANIMATED SLIDE	

Slides	Primary Course Information	Instructor Activity/Information
Routes of Exposure ▪ Inhalation – lungs by way of the mouth/nose ▪ Absorption – through the skin, eyes or membranes ▪ Ingestion – stomach by way of the mouth ▪ Injection – by breaking the skin and inserting a substance	ANIMATED SLIDE  The routes of exposure are on the test	
Habits ▪ Smoking – Inhalation ▪ Eating – Ingestion ▪ Drinking - Ingestion ▪ Rubbing eyes – Absorption **Don't do these things on a hazmat scene**	ANIMATED SLIDE	
Risks to the Environment ▪ Air ▪ Water ▪ Soil	ANIMATED SLIDE	

Slides	Primary Course Information	Instructor Activity/Information
	ANIMATED SLIDE Equate these to quality of life and cost	
	ANIMATED SLIDE Equate these to quality of life and cost	
	ANIMATED SLIDE Equate these to quality of life and cost	

Slides	Primary Course Information	Instructor Activity/Information
		
	ANIMATED SLIDE	
	ANIMATED SLIDE Use the diagram/flowchart on Student manual page 31	

Slides	Primary Course Information	Instructor Activity/Information
		
	ANIMATED SLIDE	
	END AWARENESS CHAPTER 2	

Slides	Primary Course Information	Instructor Activity/Information
Chapter 3 Detecting the Presence of Hazardous Materials		
Terminal Objectives ■ When given various facility or transportation emergency situations, or both, with and without hazardous materials present, identify those situations where hazardous materials are present and identify the hazardous substances, if possible.		 Restate the objective in your own words, but state it clearly enough so the student's can see the connection. The students are grading you on whether you state the objectives.
Terminal Objectives ■ In addition, you will be able to analyze the incident to determine the basic hazard and response information for each hazardous material by detecting the presence of the hazardous material.		 Restate the objective in your own words, but state it clearly enough so the student's can see the connection. The students are grading you on whether you state the objectives.

Slides	Primary Course Information	Instructor Activity/Information
There is never a routine hazardous materials incident ■ Too many variables ▪ Vast amount of chemicals ▪ External factors ▪ Weather ▪ Other chemicals ▪ Unknowns	The variable amount of chemicals - and their reactions - are important. Weather has an effect too. **Synerginistic effect** - this occurs when the effect of the product of a mix of two chemicals, which form a new chemical or unknown, is greater than the effects of the two precursor materials by themselves.	Weather Example - Danville Railcar incident May 2000 - Chemical involved was sodium diothinite (UN# 1384) which puts off SO_2 and H_2S as it decomposes. If one of these mix with water, Sulfuric Acid is possibly created. A concern during this incident was that the gases being produced from the decomposing material would mis with the dew and form little pools of sulfuric acid, albeit weak. - Think potholes full of acid.
TREAT EACH INCIDENT AS YOUR FIRST ■ Plan carefully ■ Approach cautiously **KEEP SAFETY AS THE PRIMARY FOCUS**		
General Clues ■ Collapsed victims ■ People running from the scene ■ Flames or smoke		

Slides	Primary Course Information	Instructor Activity/Information
		This is a hazmat incident in Hebron (Boone Co). It seems that the driver of the truck was drilling to set anchors for streetposts. The driver drilled into a 6” gas main. The clues available are smoke and flames.
General Clues ■ Rising sound ■ Hissing sound ■ Dead animals, fish, and insects		
		This is the Kentucky River after the Wild Turkey warehouse in Lawrenceburg (Anderson Co) burned. That fire resulted in about 250,000 gallons of whiskey spilling into the river killing about 1 million fish.

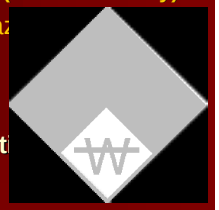
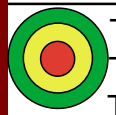
Slides	Primary Course Information	Instructor Activity/Information
Non-traditional HazMat Incidents ■ Weapons of Mass Destruction (WMD) ■ Clandestine Laboratories		Secondary devices at WMD attacks are devices that are detonated or released after a primary device - usually intend to injure or kill emergency responders.
		These pictures were taken as a 767 slammed into the World Trade Center #1 Tower. The worst terrorist attack ever. September 11, 2001. Over 300 firefighters and nearly 100 police were killed after the twin towers collapsed. A primary cause of the building failure is believed to be the extreme heat generated by the JP-5 burning.
 Methamphetamine Lab		The chemicals in this bag are key elements in making methamphetamine (meth). These are the fad around the state. The backyard scientists that make meth use things like drano, sulfuric acid, lye, lithim, and other chemicals to develop a drug that can be snorted or intraveneously delivered. Imagine how tidy they keep their labs.

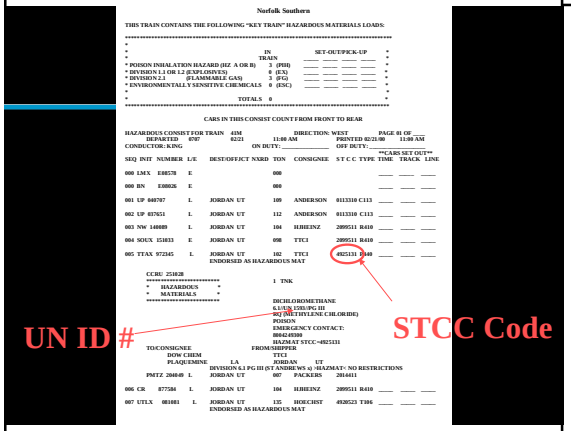
Slides	Primary Course Information	Instructor Activity/Information
Using your senses ■ Helpful, but dangerous ■ Can be misleading ■ Do not touch, taste, smell, or even approach an unknown substance without wearing the proper personal protective equipment	This is on the test. Be certain to tell the students that using one's senses is not only unwise, it is dangerous.	

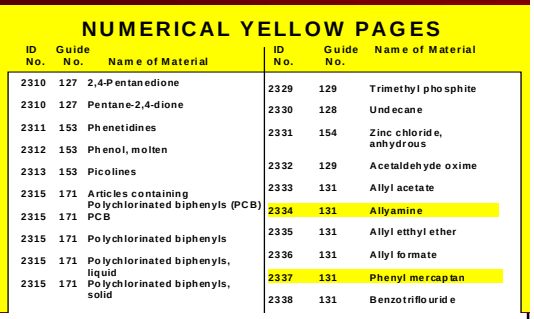
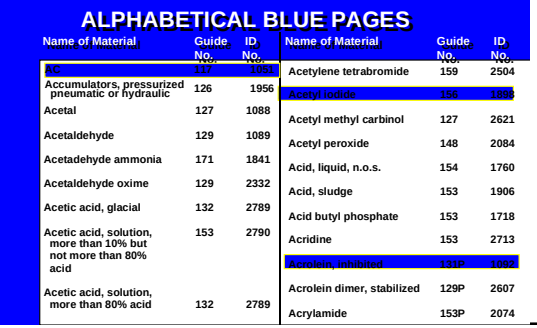
Detecting the Presence of Hazardous Materials
■ Location and Occupancy
■ Container Shapes
  ▪ Bulk Packaging
  ▪ Non Bulk Packaging
■ Markings and Colors
■ Business Names		

Location and Occupancy 	**Class Participation** Have the students name locations/ occupancies where hazmat might be. **LOCATION/OCCUPANCY** H_2O treatment plants - Chlorine Waste H_2O plants - Chlorine and Sulfur Dioxide Farm Supply Stores - Oxidizers, pesticides, fuels, anhydrous ammonia. Rubbertown (Jefferson Co) - Chemical producers Hospitals - Oxygen/Radioactives/Biologicals	 This is the water treatment plant in Lawrenceburg (Anderson Co). It sits just south of the Wild Turkey Warehouse that burned.

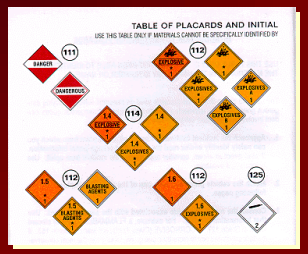
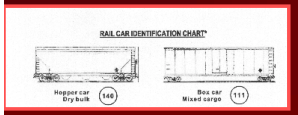
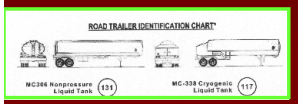
Slides	Primary Course Information	Instructor Activity/Information
Container Shapes  	Container shapes are on the test. Be certain to discuss how different shapes can help identify the product contained. Rounded ends, heavy guage steel = High pressure Blunt flat ends = low pressure	
Markings and Colors ▪ Orange - explosives ▪ Red – flammable/combustible ▪ Green – non-flammable ▪ Blue – water reactive ▪ Yellow – oxidizer/peroxides ▪ Black and white – toxic/corrosive	This is on the test. These are just rules of thumb. Use the pacards to demonstrate this. Black and white may also be indicative of unknowns - (Class 9)	**CLASS PARTICIPATION** Play a game like "Jeopardy". Give students the opportunity to see a sliver of a placard and then identify the placard - or the hazard present. Tell the students that they may only get the opportunity to see a very small part of the placard in a real world situation. This means that they will have to make some decisions based on that first observation.
Business Names **Over 5000 facilities house a reportable quantity of a hazardous material.** ▪Dow Corning ▪General Electric (GE) ▪Air Products ▪Wild Turkey ▪Somerset Refinery		

Slides	Primary Course Information	Instructor Activity/Information
Names and Systems ▪ Proper Shipping Names ▪ UN/NA Numbers ▪ Hazard Classification System ▪ Military Hazard Materials Markings ▪ Pipeline Markings	**Proper shipping names** are assigned by DOT **UN NA numbers** are the four digit numbers used on placards and in the ERG **HazClass** - Four colored bars that use the same color structure as the NFPA 704. Only this system is used on small packages - developed by the paint manufacturers association. **Military markings** - used only on base or on sole military shippments. **Pipeline markings** - Gives responsible party's name, contact number and the contents of the pipeline	
Bio Medical Hazard System ▪ CDC Logo ▪ Used to identify hazardous medical waste ▪ Body Fluids ▪ Tissues ▪ Body parts 		
National Fire Protection Association **NFPA 704 Marking System** ▪ Used on fixed facilities only **(Non-mandatory)** ▪ Colors represent specific haz ▪ **Blue = health** ▪ **Red = flammable** ▪ **Yellow = reactivity** ▪ **White = special informati** ▪ Numbers ▪ Range from 0 – 4 ▪ Higher numbers = greater the hazard 	 The information on this slide is on the test. The meaning of the colors The indication of the numbers The probable location of this placard.	0 - No or minimal hazard 1 - Slight hazard 2 - Moderate hazard 3 - Serious hazard 4 - Severe hazard

Slides	Primary Course Information	Instructor Activity/Information
Standard Transportation Commodity Codes ▪ Used in rail only (found on a **CONSIST**) ▪ Seven (7) digit code used to identify material ▪ If the **STCC** starts with a **48** or **49** then the substance is a hazardous material	STCC Codes are on the test. Shipping papers are on the test STCC codes may be called hazcodes.	Consist/Waybill = Train Bill of Lading = Truck Airbill = Plane Dangerous Cargo Manifest = Ship or barge
	This is an example of a CONSIST The order of the CONSIST begins at the beginning of the train and works to the rear.	
The 2000 Emergency Response Guidebook 		The ERG portion of this course is the single most important part. The last few questions of the course.

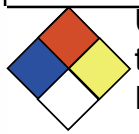
Slides	Primary Course Information	Instructor Activity/Information
Emergency Response Guidebook ■ Effective for the **first 30 minutes** of incident response ■ Developed by United States, Mexico, and Canada ■ 4 major sections ▪ Yellow – Numerical Index (UN identification #) ▪ Blue – Alphabetical Index (Product name) ▪ Orange – Emergency Guides ▪ Green – Initial Isolation/Protective Action Dist.	The effective period is on the test. The four major sections of the ERG are on the test.	The ERG says that the guidebook is only good for the first phase of an incident. That is interpreted as the first 30-45 minutes.
Yellow Section - Numerical Index  **NUMERICAL YELLOW PAGES** ID No. / Guide No. / Name of Material 2310 127 2,4-Pentanedione 2310 127 Pentane-2,4-dione 2311 153 Phenetidines 2312 153 Phenol, molten 2313 153 Picolines 2315 171 Articles containing Polychlorinated biphenyls (PCB) 2315 171 PCB 2315 171 Polychlorinated biphenyls 2315 171 Polychlorinated biphenyls, liquid 2315 171 Polychlorinated biphenyls, solid 2329 129 Trimethyl phosphite 2330 128 Undecane 2331 154 Zinc chloride, anhydrous 2332 129 Acetaldehyde oxime 2333 131 Allyl acetate 2334 131 Allyamine 2335 131 Allyl etthyl ether 2336 131 Allyl formate 2337 131 Phenyl mercaptan 2338 131 Benzotrifluoride	The student will be expected to use the ERG effectively. This includes being able to identify the UN id number, the guide number, and the name of the material. They also need to know why and when to turn to the yellow pages. In addition the student must be able to explain what the meaning of the highlighted entries and the entries with a “P” next to the guide numbers.	This is the bottom half of page 60 of the ERG. Highlighted entries - Inhalation hazard “P” next to the guide number - the chemical may undergo a violent polymerization (reaction)
Blue Section - Alphabetical Index  **ALPHABETICAL BLUE PAGES** Name of Material / Guide No. / ID No. Accumulators, pressurized pneumatic or hydraulic 126 1956 Acetal 127 1088 Acetaldehyde 129 1089 Acetadehyde ammonia 171 1841 Acetaldehyde oxime 129 2332 Acetic acid, glacial 132 2789 Acetic acid, solution, more than 10% but not more than 80% acid 153 2790 Acetic acid, solution, more than 80% acid 132 2789 Acetylene tetrabromide 159 2504 Acetyl iodide 156 1898 Acetyl methyl carbinol 127 2621 Acetyl peroxide 148 2084 Acid, liquid, n.o.s. 154 1760 Acid, sludge 153 1906 Acid butyl phosphate 153 1718 Acridine 153 2713 Acrolein, inhibited 131P 1092 Acrolein dimer, stabilized 129P 2607 Acrylamide 153P 2074	The student will be expected to use the ERG effectively. This includes being able to identify the name of the material, the UN id number, and the guide number. They also need to know why and when to turn to the yellow pages. In addition the student must be able to explain what the meaning of the highlighted entries and the entries with a “P” next to the guide numbers.	This is the top half of page 105 of the ERG. Highlighted entries - Inhalation hazard “P” next to the guide number - the chemical may undergo a violent polymerization (reaction)

Slides	Primary Course Information	Instructor Activity/Information
Orange Section - Emergency Guides Sixty Two individual guides presented in a two page Format. The left hand provides safety information. The right hand page provides emergency response guidelines. Each guide covers a group of materials which possess similar chemical and toxilogical characteristics. Example: Guide 124 – Gases-Toxic and\or Corrosive-Oxidizing		
3 - DIGIT ORANGE GUIDES GUIDE Mixed Load/Unidentified Cargo ERG2000 111 POTENTIAL HAZARDS FIRE OR EXPLOSION • May explode from heat , shock, friction or contamination. • May react violently or explosively on contact with air, water or foam • May be ignited by heat, sparks or flames. • Vapors may travel to source of ignition and flash back. HEALTH • Inhalation, ingestion or contact with substance may cause severe injury, or infection. • High concentration of gas may cause asphyxiation without warning. PUBLIC SAFETY • CALL Emergency Response Telephone Number on Shipping paper first. • Isolate spill or leak area immediately for at least 100 to 200 meters(330-660 feet). • Keep unauthorized personnel away. PROTECTIVE CLOTHING • Wear positive pressure self-contained breathing apparatus(SCBA). • Structural firefighters' protective clothing will only provide limited protection. EVACUATION Fire • If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters(1/2 mile).	The ability of the student to determine the primary hazard of a substance using the ERG. Have the students go to page 186 and go through all of the different sections of a guide.	This is the top half of page 186 of the ERG.
Green Section SMALL SPILLS (From a small package or small leak from large package) LARGE SPILLS (From a large package or from many small packages) ID No. / NAME OF Material / First ISOLATE in all Directions / Then PROTECT persons Downwind during- DAY / NIGHT 1005 Ammonia, anhydrous; 1005 Ammonia, anhydrous liquefied — 30 m (100ft) — 0.2 km (0.1 mi) — 0.2 km (0.1 mi) — 60 m (200 ft) — 0.5 km (0.3 mi) — 1.1 km (0.7 mi) 1005 Ammonia solution, with more than 50% Ammonia — 30 m (100ft) — 0.2 km (0.1 mi) — 0.2 km (0.1 mi) — 60 m (200 ft) — 0.5 km (0.3 mi) — 1.1 km (0.7 mi) 1008 Boron trifluoride; 1008 Boron trifluoride, compressed — 30 m (200 ft) — 0.2 km (0.1 mi) — 0.6 km (0.4 mi) — 215 m (700 ft) — 1.6 km (1 mi) — 5.1 km (3.2 mi) 1016 Carbon monoxide; 1016 Carbon monoxide, compressed — 30 m (100ft) — 0.2 km (0.1 mi) — 0.2 km (0.1 mi) — 125 m (400 ft) — 0.6 km (0.4 mi) — 1.8 km (1.1 mi) 1017 Chlorine — 30 m (100 ft) — 0.3 km (0.2 mi) — 1.1 km (0.7 mi) — 275 m (900 ft) — 2.7 km (1.7 mi) — 6.8 km (4.2 mi) 1955 Liquefied Gas, Poisonous (Inhalation Zone C) — 430m (1400 ft) — 4.2 km (2.6 mi) — 8.4 km (5.2 mi) — 915 m (3000 ft) — 11+ km (7.0+ mi) — 11+ Km (7.0+ mi)	The ability of the student to determine the evacuation distances and protective action distances of a substance using the ERG. Have the students go to page 318 and go through all the different sections of the table.	This is the top half of page 318 of the ERG. Have the students discuss the difference between and large spill and a small spill. 55 gallons of liquid is a good cut off point.

Slides	Primary Course Information	Instructor Activity/Information
Emergency Response Guidebook ■ Minor Sections ▪ Table of Placards ▪ Rail Car and Road Trailer Identification Chart ▪ Water Reactivity Section ▪ Instructions	Have the students look at the water reactivity section in the green pages pages 360-363.	
Table of Placards 		This is the top half of page 16 of the ERG. Use as a last resort.
Railcar and Road Trailer Chart   **These guides should be used as a last resort if the product cannot be identified by any other means**	Tank car/truck identification is learned in the Operations course.	

Slides	Primary Course Information	Instructor Activity/Information
Material Safety Data Sheets MSDS	MSDS are taught in this course because there is a reasonable possibility that the responders will encounter one.  The students will be required to use the MSDS to get specific information. This is the same basic situation the student will be confronted with during a hazardous materials emergency.	
Material Safety Data Sheets ▪ Required by 29 CFR 1910.1200 for **any** hazardous material in a facility ▪ Certain required information ▪ Usually found in the workplace with a supervisor ▪ Accessible by every employee		
Material Safety Data Sheets ▪ The identity used on the label, except for trade secrets. ▪ The chemical and common names of the material or all of the ingredients which comprise 1% or more, or .1% of a chemical known to be a carcinogen. ▪ Physical and chemical characteristics, such as vapor pressure and flash point. ▪ The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity.		Go through the different sections of the MSDS in the student manual - pages 52-55.

Slides	Primary Course Information	Instructor Activity/Information
Material Safety Data Sheets ▪ The health hazards of the hazardous chemical, including signs and symptoms of exposure, The primary routes of entry. ▪ OSHA Permissible Exposure Limit, ACGIH Threshold Limit Value etc. ▪ Any generally applicable precautions for safe handling and use that are known. This includes appropriate hygienic practices; protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks.		
Material Safety Data Sheets ▪ Emergency first aid procedures. ▪ The date of preparation or the date of the last change to the MSDS. ▪ The name, address and telephone number of the chemical manufacturer or responsible party preparing or distributing the MSDS. ▪ In addition, there is a listing of who can provide additional information on the hazardous chemical and appropriate emergency procedures.		
	END AWARENESS CHAPTER 3	

Slides	Primary Course Information	Instructor Activity/Information
Chapter 4 Scene Survey and Hazard Assessment		
You have now learned: ▪ Your role at a hazmat incident ▪ The definition of hazardous materials ▪ How hazardous materials are hazardous ▪ Classification of hazardous materials ▪ How to detect the presence of a hazmat ▪ How to identify a hazardous material	 Use this as review of sorts. This is the time to let the students see how far they have come in the last few hours.	
So now what??? Take the information you have learned and apply it. ▪ Given scenes with and without hazardous materials. ▪ Detect and identify the hazmat or lack thereof ▪ Make a written plan		 These are the objectives of this section.

Slides	Primary Course Information	Instructor Activity/Information
Terminal Objective Analyze the incident to determine both the hazardous materials present and the basic hazard and response information for each hazardous material incident by surveying a hazardous materials incident from a safe location to identify the name, UN/NA identification number, or type placard applied for any hazardous materials involved collecting hazard information from the current edition of the Emergency Response Guidebook in a safe, efficient and effective manner.		 Restate the objective in your own words, but state it clearly enough so the student's can see the connection. The students are grading you on whether you state the objectives.
Goals **SAFETY** **EFFICIENCY** **EFFECTIVENESS**	This is the formula to a successful run. In addition, you cannot one without the other.	
A Few Tips - **Keep Safety First** - **Do your best** - **Err on the side of safety** - **If you are in over your head, ask for help**		This is preparing the students for some exercises to apply all the things presented over the last few hours.

Slides	Primary Course Information	Instructor Activity/Information
Considerations for a Successful Response - **Use the clues you get to help you detect the presence of a hazmat** - **Approach and positioning** - **Initiate the notification process** - **Control Access to the site** - **Implement the Incident Management System**		
Clues for Detecting Hazmat **In order of increasing danger** 1) Review the information the caller or dispatcher provides you that may indicate the presence of hazardous materials. 2) Review the occupancy, location or local emergency operations planning documents for indications of hazardous materials. 3) Look for container characteristics that indicate hazardous materials. 4) Look for hazardous materials markings	This ties in with the clues from the earlier section. Again reinforce the danger of using the senses. Notice that each clue puts the responder closer to the scene.	
Clues for detecting hazmat **In order of increasing danger** 5) Look for placards and labels 6) Review shipping papers for hazardous materials entries. 7) Use your senses (i.e. sight, hearing, smell) to detect unusual circumstances that may indicate the presence of hazardous materials.		

Slides	Primary Course Information	Instructor Activity/Information

Approach and positioning
- Approach a potential scene
  - Uphill
  - Upwind
  - Upstream
- Position resources in a staging area
  - 2-3 minutes away from scene
  - Keep non-essential personnel at a safe distance		

Initiate the Notification Process
- **Awareness = witness or discover**
- **Alert others for help**
- **Give as much information as possible**
  - **Name**
  - **Location**
  - **Situation**
  - **Materials involved(use UN # and spell the name.)**
	Discuss the information needed for CHEMTREC	

Control Access to the Site - Use isolation distances in ERG - Evacuate if necessary - Keep unauthorized/untrained personnel out - Protect the public, environment, and property		

Slides	Primary Course Information	Instructor Activity/Information
Implement Incident Management System (IMS) ▪ IMS determines who is in charge. ▪ Begins upon arrival on scene ▪ 2 hour course that provides an overview of IMS		
Practical Applications	**CLASS PARTICIPATION** Have the students record the basic information on the forms in the back of their books. Detect the presence of hazardous materials What is it. What are the clues that say so? Estimate the likely harm if nothing is done	
	Anhydrous Ammonia Tank	

Slides	Primary Course Information	Instructor Activity/Information
	HazMat is present. Talk about the firefighter on the engine. If the wind should shift, the firefighter could be exposed to the hazardous materials in the smoke.	
	HazMat is present. This Southern States is in Lawrenceburg. There is a pressurized tank on the right side of the picture. It holds LP gas. But could hold Anhydrous Ammonia	
	HazMat is present. This truck was carrying automobile batteries when it rolled. The white substances are the broken batteries. Also look at the state Environmental Response Team member standing next to the driver. At their feet is a few pads and diesel fuel.	

Slides	Primary Course Information	Instructor Activity/Information
	There is HazMat present. That is a DOT 412 acid hauling wagon. This was a Hydrochloric acid spill in Powell County.	
	There is no HazMat present. This incident took place near Lexington. Students may choose to say there is hazmat in the trucks on the road, but it is contained and not visible.	
	There is hazmat present. The pool near the edge of the pavement is coming from the tank car. This is considered an unknown. No placards are visible, however, this could be hazmat and the assumption should be that.	

Slides	Primary Course Information	Instructor Activity/Information
	HazMat is present. This is the water treatment plant in Lawrenceburg. Note the 2-55 gallon drums on the landing.	